Electronic TUBES

7EY6

BEAM PENTODE

FOR TV VERTICAL-DEFLECTION AMPLIFIER APPLICATIONS

DESCRIPTION AND RATING

The 7EY6 is a beam-power pentode designed for use as the vertical-deflection amplifier in television receivers that employ 110-degree-deflection picture tubes. Features of the tube include high perveance and high plate dissipation. In addition, the 7EY6 incorporates a controlled heater warm-up characteristic which makes it especially suited for use in television receivers that employ series-connected heaters.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential

Heater Voltage, AC or DC	7.2	Volts
Heater Current	0.6 ±6%	Amperes
Heater Warm-up Time*	11	Seconds
Direct Interelectrode Capacitances, approximate†		
Grid-Number 1 to Plate	0.7	μμf
Input	8.5	μμf
Output	7.0	μμf

MECHANICAL

Mounting Position—Any
Envelope—T-9, Glass
Base—B6-81, Intermediate-Shell Octal 6-Pin

MAXIMUM RATINGS

VERTICAL-DEFLECTION AMPLIFIER SERVICE‡
DESIGN-MAXIMUM VALUES

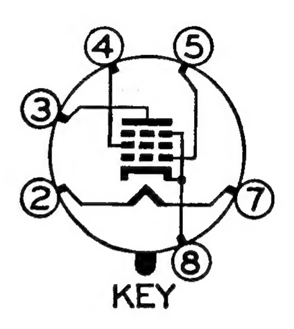
DC Plate Voltage	350	Volts
Peak Pulse Plate Voltage	2500	Volts
Screen Voltage	300	Volts
Plate Dissipation§	11	Watts
Screen Dissipation§	2.75	Watts
DC Cathode Current	60	Milliamperes
Peak Cathode Current	180	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak	200	Volts
Grid-Number 1 Circuit Resistance		
With Cathode Bias	2.2	Megohms
With Fixed Bias	1.0	Megohms
Bulb Temperature at Hottest Point	200	C

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in tube characteristics.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, and environmental conditions.

BASING DIAGRAM

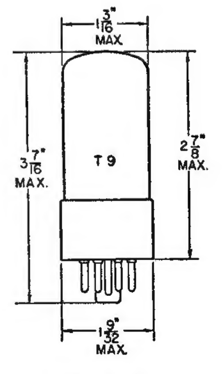


EIA 7AC

TERMINAL CONNECTIONS

Pin 2—Heater
Pin 3—Plate
Pin 4—Grid Number 2 (Screen)
Pin 5—Grid Number 1
Pin 7—Heater
Pin 8—Cathode and Beam Plates

PHYSICAL DIMENSIONS



EIA 9-15



CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

Plate Voltage	50	250	Volts
Screen Voltage	250	250	Volts
Grid-Number 1 Voltage	0¶	−17.5	Volts
Plate Resistance, approximate	...	60000	Ohms
Transconductance	...	4400	Micromhos
Plate Current	153	44	Milliamperes
Screen Current	21	3.0	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 100 Microamperes	...	−48	Volts

* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† Without external shield.

‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

§ In stages operating with grid leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

¶ Applied for short interval (two seconds maximum) so as not to damage tube.

AVERAGE PLATE CHARACTERISTICS

E_f = RATED VALUE
E_{c2} = 250 VOLTS

I_b @ E_{c1} = 0 VOLTS
-5.0
-10
I_{c2} @ E_{c1} = 0 VOLTS
-15
-17.5
-5.0
-20
-10
-25
-17.5
-15
-20
-30
-25
-30
-35
-35

PLATE CURRENT (I_b) IN MILLIAMPERES: 0, 50, 100, 150, 200

SCREEN CURRENT (I_{c2}) IN MILLIAMPERES: 0, 10, 20, 30, 40

PLATE VOLTAGE IN VOLTS: 0, 100, 200, 300, 400, 500

AVERAGE PLATE CHARACTERISTICS

E_f = RATED VALUE
E_{c1} = 0 VOLTS

I_b @ E_{c2} = 250 VOLTS
200
150
I_{c2} @ E_{c2} = 250 VOLTS
100
200
150
50
100
50

PLATE CURRENT (I_b) IN MILLIAMPERES: 0, 50, 100, 150, 200

SCREEN CURRENT (I_{c2}) IN MILLIAMPERES: 0, 10, 20, 30, 40

PLATE VOLTAGE IN VOLTS: 0, 100, 200, 300, 400, 500

AVERAGE TRANSFER CHARACTERISTICS

E_f = RATED VALUE
E_b = 250 VOLTS

E_{c2} = 250 VOLTS, 200, 150, 100, 50

PLATE CURRENT IN MILLIAMPERES: 0, 25, 50, 75, 100

GRID-NUMBER 1 VOLTAGE IN VOLTS: −50, −40, −30, −20, −10, 0

AVERAGE TRANSFER CHARACTERISTICS

E_f = RATED VALUE
E_b = 250 VOLTS

E_{c2} = 250 VOLTS, 200, 150, 100, 50

SCREEN CURRENT IN MILLIAMPERES: 0, 2, 4, 6, 8, 10

GRID-NUMBER 1 VOLTAGE IN VOLTS: −50, −40, −30, −20, −10, 0